TRET'YACHENKO, B.

Calculations and miscalculations. Okhr. truda i sots. strakh. 4 no. 2:7-9 F '61. (MIRA 14:2)

1. Spetsial'nyy korrespondent zhurnala "Okhrana truda i sotsial'noye strakhovaniye, Moskovskaya oblast', stantsiya Skhodnya."
(Moscow--Furniture industry--Hygienic aspcts)

BAKHAYEV, N.; ZHELUDKOV, N., brigadir betonshchikov; ZABIRKO, N.; MIKHAYLOVSKIY, P.; TRET'YACHENKO, B.

Surprise inspection by worker-correspondents of the All-Union Central Council of Trade Union periodical "Okhrana truda i sotsial'noe strakhovanie": Just a job or duty? Okhr. truda i sots. strakh. 3 no.8:50-54 Ag '60. (MIRA 13:9)

1.Rukovoditel' kompleksnoy brigady kommunisticheskogo truda upravleniya "Domenstroy" tresta "Kazmetallurgstroy," Karaganda (for Bakhayev). 2. Zhelezobetonnyy zavod No.1 kombinata "Karagandashakhtostroy" (for Zheludkov). 3. Korrespondent gazety "Sotsialisticheskaya Karaganda" (for Zabirko). 4. Tekhnicheskiy inspektor oblsovprofa, Karaganda (for Mikhaylovskiy). 5. Spetsial'nyy korrespondent zhurnala "Okhrana truda i sotsial'noye strakhovaniye," Karaganda (for Tret'yachenko).

(Karaganda Basin--Coal mines and mining--Safety measures)

TRET'YACHENKO, B.

Here the air is permeated with pine scent... Okhr. truda i sots. strakh. 3 no. 10:36-38 O '60. (MIRA 13:11)

1. Spetsial'nyy korrespondent zhurnala "Okhrana truda i sotsial'noye strakhovaniye," Kalininskaya oblast'.

(Kalinin Province--Health resorts, watering places, etc.)

STEPANOV, I.; YESAKOVA, T.; POLYAN, R.; PASMAN, B.; TRET'YACHENKO, B. (Novosibirsk)

All-Union state standards and sizes of clothing. Okhr.truda i sots.strakh. no.10:35-38 O '59. (MIRA 13:2)

1. Brigadir sklada slyabov tsekha goryachego prokata zavoda imeni Kuz'mina (for Stepanov). 2. Starshiy inzhener otdela vospomogatel'nykh materialov Novosibirskogo sovnarkhoza (for Yesakova). 3. Redaktor mnogotirazhnoy gazety "Stankostroitel'" (for Polyan). 4. Redaktor gazety "Metallurg" (for Pasman). 5. Spetsial'nyy korrespondent zhurnala "Okhrana truda i sotsial'noye strakhovaniye" (for Tret'yachenko).
(Novosibirsk Province--Work clothes)

TRET'YACHENKO, B. (Minsk)

Best way to know a man is to watch him at work. Okhr.truda i sots.strakh. no.9:67-71 S '59. (MIRA 13:1)

1. Spetsial'nyy korrespondent zhurnala "Okhrana i sotsial'noye strakhovaniye".
(Machinery industry--Hygienic aspects)

GIL'ZIN, Karl Aleksandrovich; KRASIL'SHCHIKOV, V., red.; TRET'YACHENKO, B., red.; TOKER, A., tekhn.red.

[In the skies of tomorrow] V nebe zavtrashnego dnia. Moskva, Vses.uchebno-pedagog.izd-vo Proftekhizdat, 1960. 180 p. (MIRA 13:7)

(Airplanes--Juvenile literature)

LIKHTER, B.; TRET'YACHENKO, B., red.; TISHEVSKIY, I., tekhn.red.

[Golden hands] Zolotye ruki. Moskva, Uchebno-pedagog.izd-vo "Trudrezervizdat," 1957. 309 p. (MIRA 10:12)
(Technical education) (Youth)

TRET'YACHENKO, B. (Stalinabad)

Happiness. Okhr.truda i sots.strakh. 3 no.3:43-45 Mr '60.
(MIRA 13:7)

1. Spetsial'nyy korrespondent zhurnala "Okhrana truda i sotsial'noye strakhovaniye)
(Silk manufacture--Hygienic aspects)

KAMENSKIY, Vladimir Georgiyevich; KOSTIN, V.P., red.; TRET'YACHENKO, B.F., red.; PERSON, M.N., tekhn.red.

[White Russian S.S.R.; a story about the seven-year plan] Belorusskaia SSR; rasskaz o semiletke. Moskva, Vses.uchebno-pedagog.izd-vo Trudrezervizdat, 1959. 74 p. (MIRA 13:1)

1. Zamestitel' predsedatelya Soveta ministrov Belorusskoy SSR (for Kamenskiy).
(White Russia--Economic policy)

POPOVSKIY, Mark Aleksandrovich; ETINGOF, Ye.B., red.; TRET'YACHENKO, B.F., red.; OSTRIROV, N.S., tekhn.red.

[When a physician dreams] Kogda vrach mechtaet. Moskva, Vses. uchebno-pedagog.izd-vo Trudrezervizdat, 1957. 189 p. (MIRA 12:3)
(MEDICINE)

TRET'YACHENKO, G. N. , KRAVCHUK, L. V.

"The Methods of Approximate Calculation of Dangerous Temperature Fields and Heat Stability Evaluation of Details Made of Fragile Materials.

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

S/137/61/000/012/056/149
A006/A101

AUTHORS: Tret'yachenko, G.N., Kravchuk, L.V.

TITLE: On a method of investigating the resistance of brittle materials against thermal failure

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 43, abstract 120304 ("Poroshk. metallurgiya", 1961, no. 2, 53-60, Engl. summary)

TEXT: It is recommended to determine heat resistance of materials with the aid of criteria, reflecting the physical properties of the specimens and the effect of the part shape, its dimensions and heating (or cooling) conditions. The authors analyze experimental methods of determining these criteria. Results of experiments, made with cylindrical and annular specimens, have partially confirmed the theoretical hypotheses.

R. A.

[Abstracter's note: Complete translation]

Card 1/1

38680

S/123/62/000/012/005/010
A004/A101

15.2400

AUTHORS: Tret'yachenko, G. N., Kravchuk, L. V., Mozharovskiy, N. S.

TITLE: Thermal fatigue of cermet materials

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 12, 1962, 37, abstract 12B218 ("Poroshk. metallurgiya", 1961, no. 4, 94 - 97, English summary)

TEXT: Investigations of the thermal fatigue of cermet materials were carried out with silicon carbide compositions containing 65% silicon carbide, and also on the base of borides, nitrides, silicides and carbides. It was found that titanium and chromium borides and carbides and also their combinations among each other and with molybdenum silicide are not heat-resistant. Silicon nitrides and zirconium borides showed a higher heat resistance. The most heat-resistant cermet materials are those on the base of silicon carbide. When testing the thermal fatigue, the test basis of cermet materials can be chosen in tens or hundreds of cycles (depending on the cermet material and its intended use). The magnitude of the criterion of heat resistance of cermet materials decreases by a factor of

Card 1/2

Thermal fatigue of cermet materials

S/123/62/000/012/005/010
A004/A101

3 - 4 after some tens of cycles. Parts from cermet materials operating under thermal fatigue conditions break, as a rule, without preliminary cracks. If, however, cermet parts operate at the thermal fatigue limit, cracks may appear whose depth does not change over a long time.

[Abstracter's note: Complete translation]

Card 2/2

S/170/61/004/008/016/016
B125/B201

AUTHORS: Tret'yachenko, G. N., Kravchuk, L. V.

TITLE: Regular thermal behavior of bodies of complicated structure

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no.8, 1961, 132-137

TEXT: The authors conducted a great number of experiments and also performed a theoretical analysis of the results yielded by fundamental studies of G. M. Kondrat'yev and G. N. Dul'nev, the founders of the theory of the regular thermal behavior of bodies (which studies, in the authors' opinion, contain important errors). The following was established: G.M.Kondrat'yev studied the rules governing regular operation for any system of bodies or for an arbitrarily complicated body. In doing so, he proceeded from the following principal theorem: The general integral of Fourier equations for the problem of cooling a homogeneous and isotropic body having any shape (also any complicated shape) is expressed by an infinite series, whose terms are rapidly decreasing functions of time:

Card 1/4

Regular thermal behavior of...

$$t = A_o U_o e^{-m_o \tau} + A_1 U_1 e^{-m_1 \tau} + \ldots . \quad (1)$$

Here, the positive numbers m_o, m_1,... form the sequence $0 < m_o < m_1 < m_2 < \ldots$ (2); U_o, U_1 are finite functions of the coordinates of the points of the body. The likewise finite numbers A_o, A_1 are functions independent of time and of the coordinates. According to G. M. Kondrat'yev, the higher terms in (1) can be neglected with respect to the first term. Then, in case of a regular behavior, the temperature in any point of the body would amount to $\vartheta = AUe^{-m\tau}$ (3). In the authors' opinion, this assumption, upon which the whole theory by Kondrat'yev-Dul'nev is based, is inappropriate since the effect of the values of the eigenfunctions U_j upon the total sum of series (1) can be so large that not only the first term but also any other n-th term of the series can be the "characteristic term". For a wedge, the first terms can be smaller than some "characteristic" terms. These characteristic terms are displaced depending on the coordinates of the

point to be investigated. The cooling rate of a homogeneous body in case of a regular operation is usually a quantity depending on the coordinates. In special cases where the products of the constant coefficients with the eigenfunctions assume their maximum values with the first term of the series (1), the cooling rate may be independent of the coordinates. The first inaccuracy of the theory of Kondrat'yev-Dul'nev consists in that it does not apply to bodies of any complicated shape. In fact, it applies to a particular category of bodies only. This fundamental defect has given rise to a number of erroneous assumptions: G. M. Kondrat'yev's assumption of a constant ratio between any two points is usually incorrect. In general, this ratio constitutes an exponential function of time. The first theorem by Kondrat'yev then assumes the following new meaning: The rate of variation of the mean volume temperature is proportional to the surface of the body, and inversely proportional to its specific heat. At a constant cooling rate at a given point, the rate of variation of the mean volume temperature is variable with time. G. M. Kondrat'yev's paper Sb. "Issledovaniya v oblasti teplovykh izmereniy i priborov" LITMO, vyp. 21, L., 1957 (Investigations in the field of thermal measurements and

devices) is, in the authors' opinion, based on wrong premises from beginning to end, and the same applies to papers by G. N. Dul'nev, L. P. Lozitskiy, and many others. In conclusion, the theory by G. M. Kondrat'yev-Dul'nev on regular operation is correct only when applied to bodies of simplest shape. This has also been confirmed by the authors' experiments on the cooling of wedge-shaped specimens with different vertical angles of the wedge under the most different conditions. There are 2 figures and 14 references: 13 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR g. Kiyev (Institute of Powder Metallurgy and Special Alloys, AS UkrSSR Kiyev)

SUBMITTED: January 2, 1961

TRET'YACHENKO, G.N., kand.tekhn.nauk; KRAVCHUK, L.V., inzh.

Methods for testing the heat resistance of powdered metal materials. Energomashinostroenie 7 no.6:42-44 Je '61. (MIRA 14:7)

(Powder metallurgy—Testing)

88289

S/032/61/027/001/027/037
B017/B054

15.2200

AUTHORS: Tret'yachenko, G. N. and Kravchuk, L. V.

TITLE: Gasdynamic Stand for Tests of Refractories

PERIODICAL: Zavodskaya laboratoriya, 1961, Vol. 27, No. 1, pp. 93-95

TEXT: A special gasdynamic stand was developed to test the resistance of powder-metallurgic materials, the thermal stress and thermal stability in fast temperature changes and fast gas currents. By means of this device, it is possible to determine the thermal constants of refractories (coefficients of heat conductivity and thermal diffusivity, coefficient of heat liberation on the sample surface) at different temperatures. Differently shaped materials can be used in the determination. The gasdynamic stand comprises the following systems: a chamber for generating a high-velocity flow of gas with high temperature, a system for introducing the gas, a system for feeding the stand with fuel, a lubricating system, and a control and measuring apparatus. By determining the thermal constants it is possible to establish the factors influencing the amount of thermal stress, which permits a proper choice of profiles for materials in powder

Card 1/2

88289

Gasdynamic Stand for Tests of Refractories

S/032/61/027/001/027/037
B017/B054

metallurgy. There is 1 figure.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov Akademii nauk USSR (Institute of Powder Metallurgy and Special Alloys, Academy of Sciences UkrSSR)

Card 2/2

PISARENKO, Georgiy Stepanovich; KOZLOV, Igor' Andreyevich; TRET'YACHENKO, Georgiy Nikolayevich; KRAVCHUK, Leonid Vasil'yevich; LEBEDEV, Igor' Vladimirovich; GRYAZNOV, B.A., red. izd-va; LIBERMAN, T.R., tekhn. red.

[Strength of blades and disks of gas turbines; thermal fatigue resistance of blades and ultimate carrying capacity of disks] Nekotorye voprosy prochnosti lopatok i diskov gazovykh turbin; stoikost' lopatok protiv teplosmen i predel'naia nesushchaia sposobnost' diskov. Kiev, Izd-vo Akad.nauk USSR, 1962. 74 p. (MIRA 15:7)

(Gas turbines)

TRET'YACHENKO, S. N.

S/021/62/000/006/005/013
D251/D308

AUTHORS: Tret'yachenko, H.M., and Pysarenko, H.S., Corresponding Member of the AS UkrSSR

TITLE: On the basic concepts of the theory of regular thermal regimes

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 6, 1962, 745 - 748

TEXT: The authors discuss the problem of the rate of cooling, which is one of the basic concepts of theory of regular thermal regimes. G.M. Kondrat'yev assumed that the first term of Boussinesq's expansion of the general integral of Fourier's equation applied to the problem of cooling a body of arbitrary form, is sufficiently for practical purposes. The authors give an account of their theoretical and experimental investigations on the rate of cooling of bodies of different forms. In particular, it is shown by the example of a wedge that the rate of cooling is not independent of the coordinates, and hence Kondrat'yev's assumption is not generally valid. Hence, not all parts of the body can enter into a regular thermal regi-

Card 1/2

me, a fact which must be considered when the theory is used to determine temperature fields, the regular cooling of machine parts and models of multiphase dispersed materials and systems of bodies and also to determine the local coefficients of heat exchange. It is noted that the assertation of Kondrat'yev, that the position of the thermocouple has no effect on the value obtained in determining the rate of cooling, must be treated with caution. There are 3 figures.

ASSOCIATION: Instytut metalokeramiky i spetsial'nykh splaviv AN URSR (Institute of Metal Ceramics and Special Alloys, AS UkrSSR)

SUBMITTED: December 13, 1961

S/170/62/005/004/011/016
B104/B108

AUTHOR: Tret'yachenko, G. N.

TITLE: The theories of regular heat conditions

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 4, 1962, 99 - 105

TEXT: This is a survey on the theory of regular heat conditions, developed in various publications issued between 1931 and 1961. The works of the founder of this theory, G. M. Kondrat'yev (ZhTF, 1, no. 4, 340, 1931) are considered mainly. G. N. Dul'nev, L. I. Zhemkov, L. I. Kudryashev, E. M. Semyashkin, and L. A. Vvedenskaya are mentioned. There are 13 references: 12 Soviet and 1 non-Soviet.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR, g. Kiyev (Institute of Powder Metallurgy and Special Alloys AS UkrSSR, Kiyev)

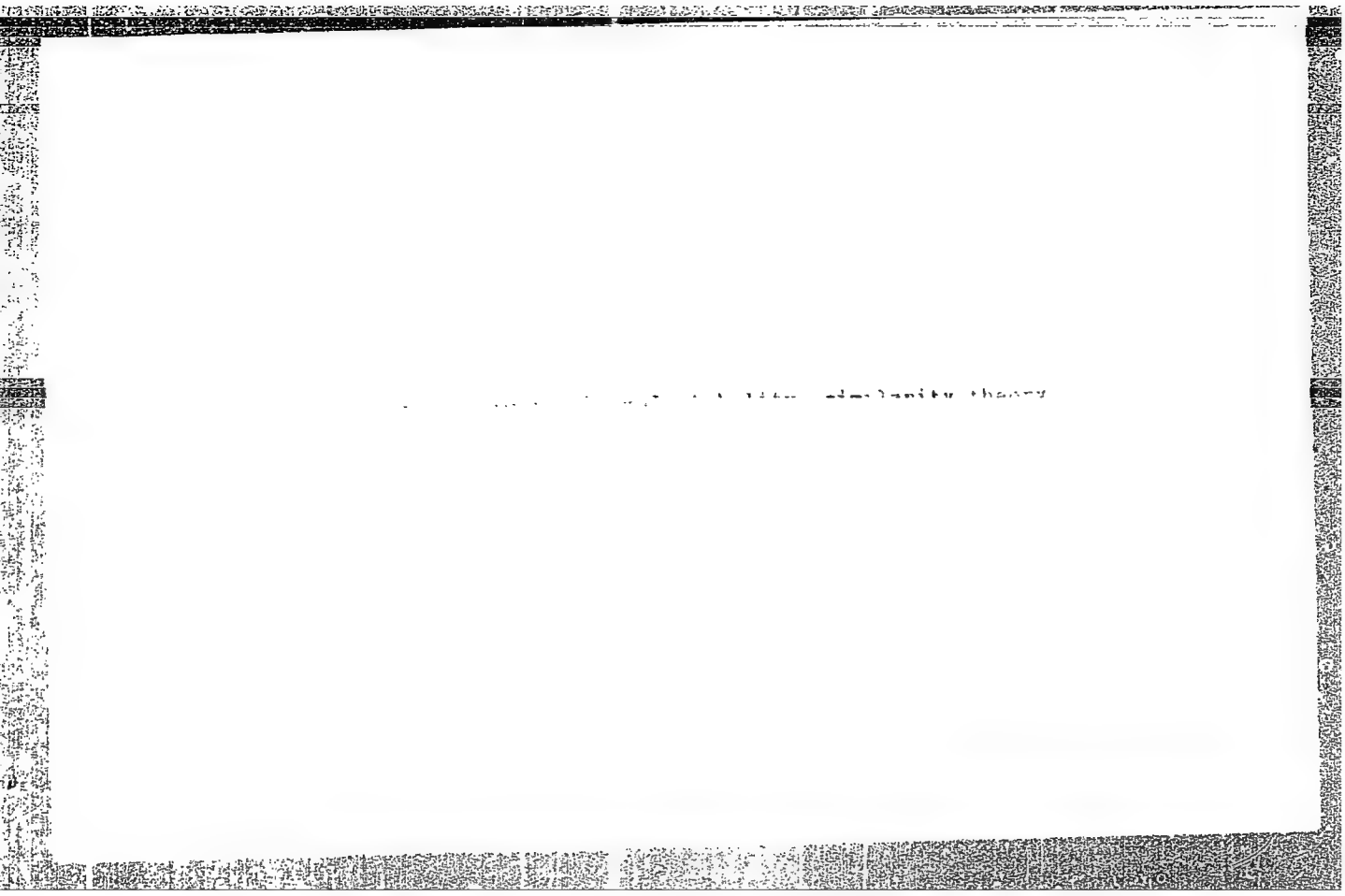
SUBMITTED: January 9, 1962

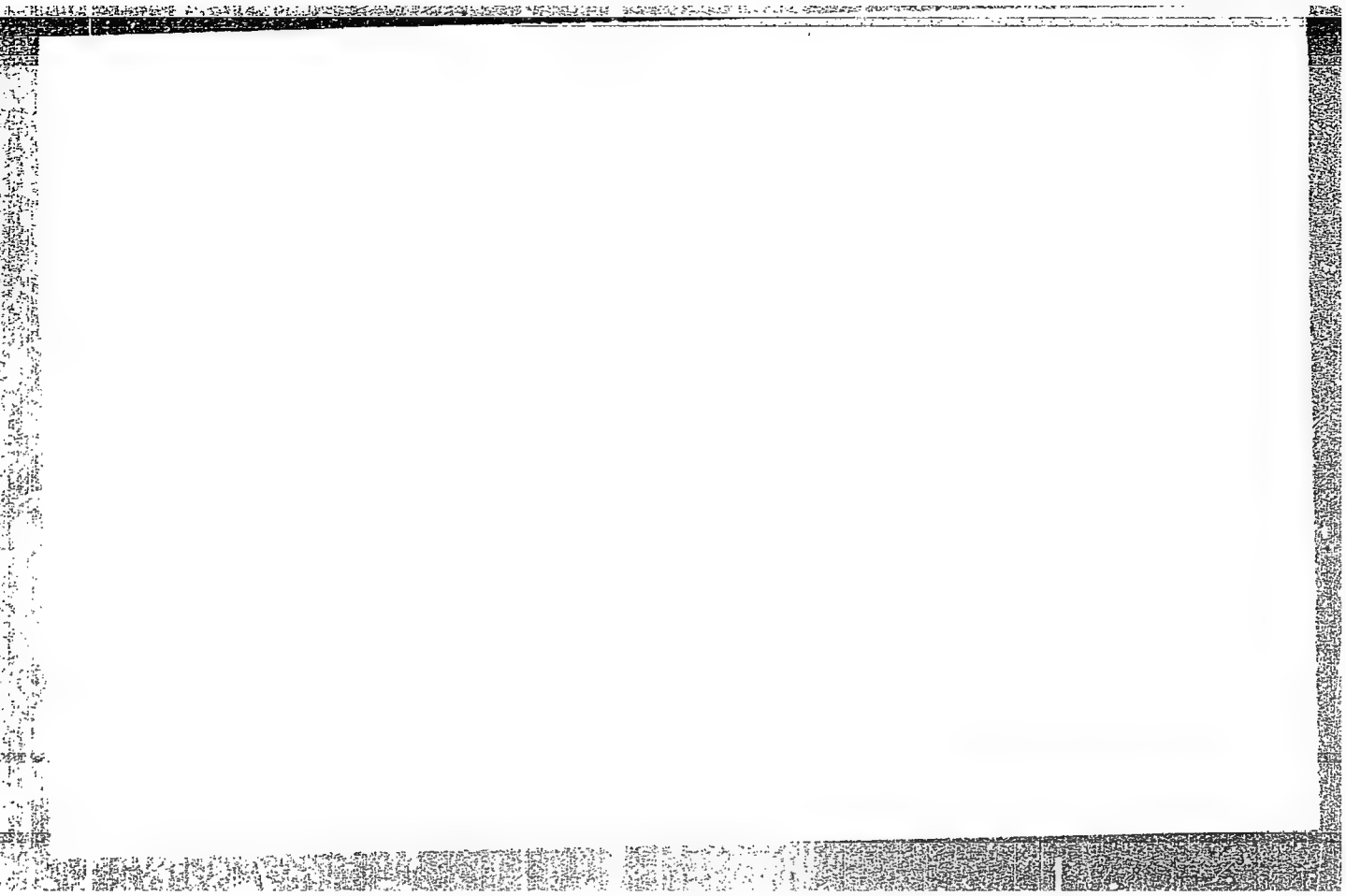
Card 1/1

TRET'YACHENKO, G.N.

Basic preconditions in the theory of regular thermal conditions
Inzh.-fiz.zhur. 5 no.9:105-111 S '62. (MIRA 15:8)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR, Kiyev.
(Solids—Thermal properties)





L 21825-66 EWP(k)/EWT(d)/EWT(m)/EWP(h)/ETC(m)-6/T/EWP(l)/EWP(w)/EWP(r)/EWP(t)

ACC NR: AT6008667 (N) SOURCE CODE: UR/0000/65/000/000/0236/0238

JP(c) EM/MJW/JD/GS

AUTHORS: Kuriat, R. I. (Kiev); Dubinin, V. P. (Kiev); Tret'yachenko, G. N. (Kiev)

ORG: none

TITLE: The effect of thermal fatigue on the durability of materials

SOURCE: Vsesoyuznoye soveshchaniye po voprosam staticheskoy i dinamicheskoy prochnosti materialov i konstruksionnykh elementov pri vysokikh i nizkikh temperaturakh, 3d. Termoprochnost' materialov i konstruktsionnykh elementov (Thermal strength of materials and construction elements); materialy soveshchaniya, Kiev, Naukova dumka, 1965, 236-238

TOPIC TAGS: thermal stability, cyclic load, high temperature strength, turbine blade, alloy, metallurgic testing machine / IP-4M metallurgic testing machine, EI607A alloy, EI765 alloy, EI827 alloy, ZhS6K alloy

ABSTRACT: The thermal stability of nozzle blades of EI607A, EI765, and EI827 alloys is tested by a method described earlier by G. N. Tret'yachenko, R. I. Kuriat, L. V. Kravchuk (Voprosy vysokotemperaturnoy prochnosti v mashinostroyenii, Izd-vo AN UkrSSR, 1963). The blades of EI607A were tested under conditions of 1173 ⇄ 343K, and the others under conditions of 1273 ⇄ 343K. All blades had a height of 72 mm and a chord of 52 mm. Specimens with a diameter of 5 ± 0.05 mm and an effective length of 25 mm

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L 21825-66

ACC NR: AT6008667

cut from blades were tested for durability with an IP-4M machine, under cyclic loading. Alloy EI765 was found to have the better thermal stability; alloy EI827 was found to have the better durability. Orig. art. has: 1 photograph and 1 table.

SUB CODE: 11/ SUBM DATE: 19Aug65/ ORIG REF: 002

Thermal stress

Card 2/2

L 22982-66 EWT(d)/EWP(e)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(l)

ACC NR: AT6008668 (N) SOURCE CODE: UR/0000/65/000/000/0239/0243

JD/GS/WH

AUTHORS: Gogotsi, G. A. (Kiev); Tret'yachenko, G. N. (Kiev)

ORG: none

TITLE: Method for testing brittle materials in a stationary thermal field

SOURCE: Vsesoyuznoye soveshchaniye po voprosam staticheskoy i dinamicheskoy prochnosti materialov i konstruktsionnykh elementov pri vysokikh i nizkikh temperaturakh, 3d. Termoprochnost' materialov i konstruktsionnykh elementov (Thermal strength of materials and construction elements); materialy soveshchaniya. Kiev, Naukova dumka, 1965, 239-243

TOPIC TAGS: metal ceramic material, metal inspection, electric insulation, thermal insulation, laboratory instrument, material testing machine

ABSTRACT: This paper describes an installation for testing the strength of brittle materials, viz: ceramic insulators and other refractory materials at high temperatures. The installation was developed by the Institute for the Problems of the Science of Materials, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR). A photograph of the installation is presented (see Fig. 1). This testing machine makes it possible to determine the actual temperature and stress existing in the specimen (in particular, the values of these variables on the surface of an annular specimen at the moment of failure). It also serves to evaluate the thermal stability criterion at constant

Card 1/3

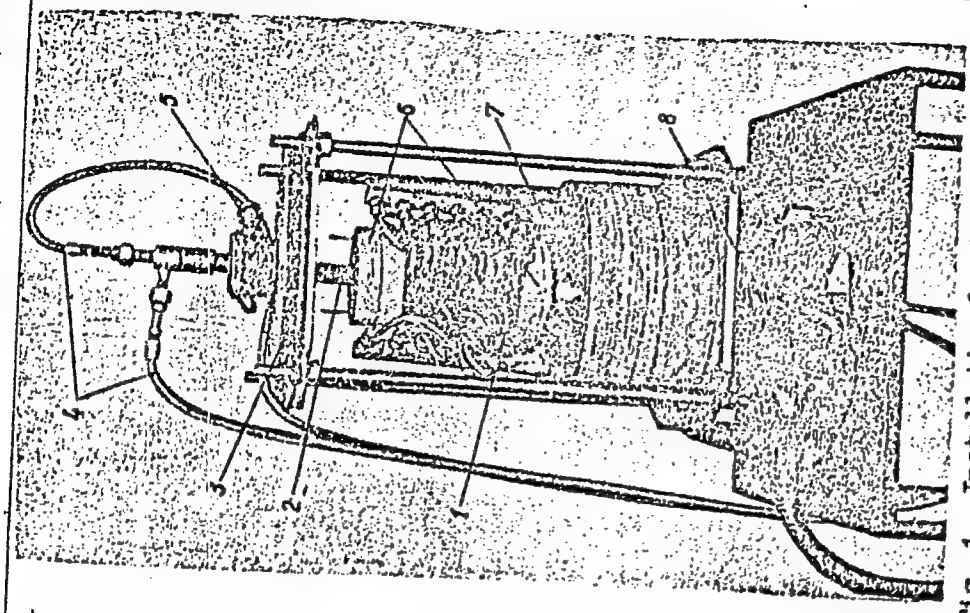

Fig. 1. Installation for testing brittle materials in a stationary thermal field. 1 - cooling coil; 2 - heater; 3 - stand; 4 - cold water inlet pipe; 5 - macrometric screw; 6 - asbestos cement plates; 7 - water collector; 8 - water inlet to collector.

temperature conditions, $$R' = \lambda \frac{\sigma_s (1-\mu)}{Ea},$$

where λ is the coefficient of heat conductivity of the material at the mean specimen temperature $t_m = (t_1 + t_2)/2$. Here t_1 is the temperature of the inner surface of the

ring, t_2 is the temperature of the outer surface of the ring, σ_B is breaking point of the material during elongation, μ is the Poisson coefficient; E is the modulus of elasticity, and α is the linear coefficient of expansion. The use of this technique leads to the determination of the heat conductivity λ and the criterion $R = R'/\lambda$ that characterizes the thermal stability of the material at limiting conditions of heat exchange, corresponding to the instantaneous change in the temperature of surface of the material up to the temperature of the surrounding medium. Finally, this method makes it possible to investigate the effect of different modes of heating on the phenomenon of thermal fatigue in brittle materials. Orig. art. has: 2 graphs and 1 equation.

SUB CODE: 11/ SUBM DATE: 19Aug65

L 44197-66 EWT(m)/EWP(w)/EWP(j)/T/EWP(t), ETI JD/WW/RM

ACC NR: AP6015700 (A) SOURCE CODE: UR/0413/66/000/009/0098/0098

INVENTOR: Pisarenko, G. S.; Tret'yachenko, G. N.; Gogotsi, G. A.

ORG: none

TITLE: Device for recording failures of test pieces prepared from brittle heat-insulating materials. Class 42, No. 181362 [announced by the Institute for Problems in Science of Materials AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 98

TOPIC TAGS: recording device, failure pickup unit, heat insulating material

ABSTRACT: This Author Certificate introduces a device for recording failures of test pieces prepared from brittle heat-insulating materials during tests for heat resistance featuring failure pickup units, a temperature transmitter, and an automatic temperature recorder. For higher accuracy, there is a relay-type slave mechanism with open

Card 1/2

UDC: 620.172.224.4

L 44197-66

ACC NR: AP6015700

contacts between the temperature transmitter and the recorder. The mechanism is connected with both the single signal unit and storage unit which, in turn, are connected by current leads with the failure pickup units of the test pieces (see Fig. 1). Orig. art. has: 1 figure. [Translation]

[LD]

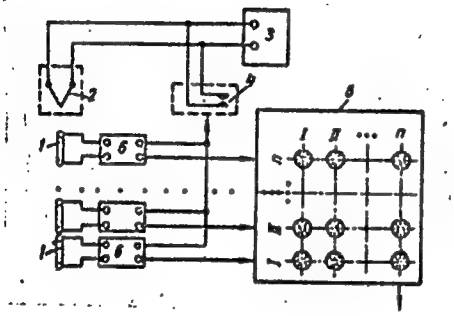

Fig. 1. Automatic device for recording failures of test pieces prepared from heat-insulating materials. 1—Failure pickup unit; 2—temperature transmitter; 3—automatic recorder; 4—slave mechanism; 5—storage unit; 6—single signal unit

SUB CODE: 13/4/ SUBM DATE: 18Jan65/

Card 2/2

L 31115-66 EWT(l)/EWP(m)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWA(l)/
ACC NR: AT6008671 (N) ETC(m)-6 IJP(c) JD/EM/WB/GS SOURCE CODE: UR/0000/65/000/000/0261/0268

AUTHORS: Pisarenko, G. S. (Academician AN UkrSSR) (Kiev); Tret'yachenko, G. N. (Kiev); Gogotsi, G. A. (Kiev); Kravchuk, L. V. (Kiev); Kuriat, R. I. (Kiev); Vdovenko, V. V. (Kiev); Gryaznov, B. A. (Kiev)

ORG: none

TITLE: Apparatus for investigating characteristic strength of materials and structural elements in high-temperature gas streams

SOURCE: Vsesoyuznoye soveshchaniye po voprosam staticheskoy dinamicheskoy prochnosti materialov i konstruktsionnykh elementov pri vysokikh i nizkikh temperaturakh, 3d, Termoprochnost' materialov i konstruktsionnykh elementov (Thermal strength of materials and construction elements); materialy soveshchaniya. Kiev, Naukova dumka, 1965, 261-268

TOPIC TAGS: high temperature strength, gas flow, temperature test, test chamber, aerodynamic environment test

ABSTRACT: The details of a test apparatus for investigating the high-temperature strength of materials and parts are described. This apparatus is used to evaluate the fatigue strength of brittle and plastic structural elements (such as gas turbine blades), the thermal shock characteristics of various materials, their thermal

Card 1/2

L 31115-66

ACC NR: AT6008671

stability, oxidation resistance at high temperatures, etc. The apparatus consists of a gas dynamic test bed, a high-temperature flow generator (from 600 to 3000K), and an instrumentation complex for measuring and recording the flow temperature and other parameters. The gas flow can attain velocities up to Mach 1.5 at a flow rate of 1.7 kg/sec, and pressures of 80 newtons/cm^2. The air stream is heated successively in three combustion chambers and pumped through a blow-through chamber. Three types of blow-through chambers are used as test sections: one for a continuous test run, another for a controlled duration test run, and a third type for instantaneous exposure and removal of the model. The instrumentation consists of thermocouples, automatic recording potentiometers, calorimeters, pyrometers, oscillograms, and flow meters. The apparatus also contains a device for controlling the mixture of the test gas. Orig. art. has: 4 figures.

SUB CODE: 20,13/ SUBM DATE: 19Aug65

Card 2/2

TRET'YACHENKO, G.N. [Tret'iachenko, H.M.]; PISARENKO, G.S. [Pysarenko, H.S.]

Cooling of a symmetric sandwich plate under boundary conditions of the first kind. Dop. AN URSR no.9:1166-1170 '62. (MIRA 18:4)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
2. Chlen-korrespondent AN UkrSSR (for Pisarenko).

PISARENKO, G.S.; VDOVENKO, V.V.; GOGOTSI, G.A.; GRYAZNOV, B.A.; KRAVCHUK, L.V.; KURIAT, R.I.; TRET'YACHENKO, G.N.

System for testing materials in a high-temperature flow. Energ. i elektrotekh. prom. no.4:22-23 O-D '64.

(MIRA 18:3)

[illegible], G.N., kand. tekhn. nauk; GOLOVIN, G.A., kand. tekhn. nauk

System for testing materials in stationary heat [illegible]. Energ. i elektrotekh. prom. no.1:24-26 Jan '63.

(MIRA 17:10)

GETSOV, L.B., kand. tekhn. nauk; TRET'YACHENKO, G.N., kand. tekhn. nauk; KURIAT, R.I., inzh.

Structural strength of the nozzle blades of gas turbines. Teploenergetika 11 no.4:45-49 Ap '64. (MIRA 17:6)

1. Zavod "Ekonomayzer".

TRET'YACHENKO, G.N., kand. tekhn. nauk; MOZHAROVSKIY, N.S., kand. tekhn. nauk; KRAVCHUK, L.V., inzh.; KURIAT, R.I., inzh.

Investigation of the thermal fatigue of the 1Kh18N9T alloy taking into consideration boundary conditions of heat exchange. Izv. vys. ucheb. zav.; mashinostr. no.2:43-50 '63. (MIRA 16:8)

1. Kiyevskiy politekhnicheskiy institut.

ACCESSION NR: AP4025423 S/0096/64/000/004/0045/0049

AUTHORS: Getsov, L. B. (Candidate of technical sciences); Tret'yachenko, G. N. (Candidate of technical sciences); Kuriat, R. I. (Engineer)

TITLE: Structural strength of vanes on gas turbines

SOURCE: Teploenergetika, no. 4, 1964, 45-49

TOPIC TAGS: vane, turbine vane, gas turbine vane, metal strength, vane stiffness, vane heat resistance, steel EI 765, steel EI 827, steel EI 607 AL, steel EI 787L, steel EI 765L [L. 17]

ABSTRACT: This investigation was undertaken because of the formation of cracks on turbine vanes forged of steel EI-607A. The experimental vanes were forged of steels EI-765 and EI-827 and cast of steels EI-607AL, EI-787L, and EI-765L [L. 17]. The chemical composition (in %) of these metals is: for EI-765, C--0.12, Cr--14.75, Ni--trace, Ti--1.22, Al--1.84, W--4.94, Mo--3.96; EI-827 is a highly heat-resistant nickel steel; for EI-607Al, C--0.02, Cr--15.37, Ni--trace, Ti--1.63, Nb--1.10, Al--0.51; for EI-787L, C--0.04, Cr--14.5, Ni--34.16, Ti--2.73, Al--1.00, W--3.03; for EI-765L, C--0.10, Cr--14.29, Ni--trace, Ti--1.44, Al--1.63, W--4.60,

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ACCESSION NR: AP4025423

Mo--3.80. The vanes made of the first three steels were solid, those made of the last two were hollow. Their shapes and the location of thermocouples are shown in Fig. 1 on the Enclosure. The cast vanes (containing a small number of fine holes due to the presence of Ti and Al) were tested in the temperature cycles of 70-900C and 70-1000C, while the hollow ones were tested at 70-800C and 70-900C. The number of test cycles ranged up to 1000, with each lasting 2.25-4.20 min. Cooling air was delivered at the rate of 0.0075 kg/sec per blade and hot gas at the rate of $\leq$0.25 kg/sec per jet at an entry velocity of $\leq$ 100 m/sec. The number of thermal cycles sustained by each blade prior to the formation of cracks was recorded and the growth of the first crack (in the solid vanes) was observed. Both the cooled and the uncooled hollow vanes were studied. In all cases the majority of cracks formed at the outflow edges of the vanes. Though the number of experiments conducted was too small to form final conclusions, the preliminary observations indicate that: 1) steel EI-787L should be used in hollow guide vanes and EI-607A in solid ones for temperatures below 800C; 2) steel EI-827 may be used in vanes at temperatures up to 1000C on turbines requiring a limited number of starts (the long-term qualities of this steel should be checked further); 3) cooled vanes of steel EI-787L and EI-765L may be employed up to the temperature of 1200C, provided that the number of fast starts is limited; 4) hollow cast vanes should be

Card 2/43

ACCESSION NR: AP4025423

thoroughly inspected for dimensional irregularities and metallurgical flaws. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: Zavod "Ekonomayzer" (Ekonomayzer Plant)

SUBMITTED: 00	DATE ACQ: 20Apr64	ENCL: 01
SUB CODE: ML	NO REF SOV: 002	OTHER: 000

Card 3/3

ACCESSION NR: AT4010240 S/3052/63/000/003/0054/0061

AUTHOR: Tret'yachenko, G. N. (Kiev)

TITLE: Variable temperature stresses in triple-layer plates

SOURCE: AN UkrSSR. Institut mekhaniki. Teplovy*ye napryazheniya v elementakh konstruktsiy; nauchnoye soveshchaniye. Doklady*, no. 3, 1963, 54-61

TOPIC TAGS: gas turbine, turbine, turbine blade, turbine blade stress, turbine blade thermal stress

ABSTRACT: The author has evaluated stresses appearing at the border between different materials and on the surfaces of parts in a variable temperature field, in particular for engine (gas turbine) parts working at temperatures reaching 1000C. Alloys and special metalloceramic materials are considered. High-temperature strength is usually combined with brittleness and low resistance to thermal stress or intensive oxidation of the surface. Specifically, the investigation concerned cracking of the heat-resistant enamel coating. The analysis permitted an approximate estimation of the stresses which are the cause of cracks in the heat-resistant layer. A special testing chamber was used, produced by the

Card

ACCESSION NR: AT4010240

Institut metallokeramiki i spetsial*nikh splavov AN UkrSSR(Institute of metalloceramics and special alloys of the AN UkrSSR) Orig. art. has: 3 figures and 38 formulas.

ASSOCIATION: Institut mekhaniki AN UkrSSR (Mechanics Institute AN UkrSSR)

SUBMITTED: 00 DATE ACQ: 17Jan64 ENCL: 00

SUB CODE: PR, AP NO REF SOV: 004 OTHER: 000

Card 2/2

TRET'YACHENKO, G.N., kand. tekhn. nauk

Gas dynamics stand for testing materials at high temperatures. Mashinostroenie no.1:96-97 Ja-F '63. (MIRA 16:7)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Materials at high temperatures—Testing)

TRET'YACHENKO, G.N.; KRAVCHUK, L.V.; MOZHAROVSKIY, N.S.

Thermal fatigue of ceramic metal materials. Porosh. met. no.4: 94-97 Jl-Ag '61. (MIRA 16:5)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Ceramic metals--Testing)
(Metals, Effect of temperature on)

TRET'YACHENKO, G.N.

Criteria for the heat resistance of ceramic metals. Porosh. met. 3 no.1:60-66 Ja-F '63. (MIRA 16:3)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Ceramic metals--Thermal properties)

TRET'YACHENKO, G.N., kand.tekhn.nauk; KURIAT, R.I.; KRAVCHUK, L.V.

Study of the thermal fatigue of turbine nozzle blades made from EI 607A and EI 765 alloys. Energ.i elektrotekh.prom. no.4:19-22 O-D '62. (MIRA 16:2)
(Gas turbines) (Metals—Fatigue)

PISARENKO, Georgiy Stepanovich; TROSHCHENKO, Valeriy Trofimovich; TIMOSHENKO, Vsevolod Georgiyevich; KUZ'MENKO, Vasiliy Aleksandrovich; ISAKHANOV, Georgiy Vakhtangovich; TRET'YACHENKO, Georgiy Nikolayevich; GRYAZNOV, Boris Alekseyevich; NOVIKOV, Nikolay Vasil'yevich; RUDENKO, Vasiliy Nikitich; SHUMILOVA, Rufina Gerasimovna; LEBEDEV, I.V., red.; DAKHNO, Yu.B., tekhn. red.

[Strength of ceramic metals and alloys at normal and high temperatures]Prochnost' metallokeramicheskikh materialov i splavov pri normal'nykh i vysokikh temperaturakh. Kiev, Izd-vo Akad. nauk USSR, 1962. 274 p. (MIRA 16:2)

1. Chlen-korrespondent Akademii nauk Ukr.SSR (for Pisarenko).
(Ceramic metals)
(Metals at high temperatures)

5

PHASE I BOOK EXPLOITATION SOV/6342

Pisarenko, Georgiy Stepanovich, Valeriy Trofimovich Troshchenko, Vsevolod Georgiyevich Timoshenko, Vasiliy Aleksandrovich Kuz'menko, Georgiy Vakhtangovich Isakhanov, Georgiy Nikolayevich Tret'yachenko, Boris Alekseyevich Gryaznov, Nikolay Vasil'yevich Novikov, Vasiliy Nikitich Rudenko, and Rufina Gerasimovna Shumilova

Prochnost' metallokeramicheskikh materialov i splavov pri normal'nykh i vysokikh temperaturakh (Strength of Sintered Materials and Alloys at Room and High Temperatures) Kiyev, Izd-vo Akademii nauk UkrSSR, 1962. 274 p. Errata slip inserted. 2400 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Resp. Ed.: G. S. Pisarenko, Corresponding Member, Academy of Sciences USSR; Ed.: I. V. Lebedev; Tech. Ed.: Yu. B. Dakhno.

Card 1/12

PURPOSE: The book is intended for engineers, scientific research workers, aspirants, and students concerned with problems of the strength of sintered materials and structural parts.

COVERAGE: The book reviews the results of studying the strength, ductility, and elasticity of materials and structural parts produced by powder-metallurgy methods and presents brief information on these methods. Particular attention is given to methods of experimental investigation of physical and mechanical characteristics of heat-resistant sintered materials with specific properties, and to the description of a number of testing units developed for these investigations. Some problems of the theory of the strength of brittle sintered materials and high-porosity ductile materials are discussed. Laws governing changes in characteristics of strength and elasticity under the effect of various factors are outlined. The appendix includes reference tables with data on the basic mechanical characteristics of a number of sintered materials. The assistance of members of the Powder Metallurgy Institute V. I. Kovpak, Yu. A. Kashtalyan, L. V. Kravchuk, A. P. Yakovlev, V. K. Kharchenko, V. K. Kuz'menko, and V. A. Chebotarev is acknowledged. There are 141 references, mostly Soviet.

ACCESSION NR: AT4002338 S/3036/63/000/000/0212/0221

AUTHOR: Tret'yachenko, G. N. (Kiev); Kuriat, R. I. (Kiev); Kravchuk, L. V. (Kiev)

TITLE: Some results of gas turbine blade thermal fatigue tests

SOURCE: Voprosy* vy*sokotemperaturnoy prochnosti v mashinostroyenii. Vtoroye nauchnotekhnicheskoye soveshchaniye, 1962. Trudy*. Kiev, 1963, 212-221

TOPIC TAGS: gas turbine blade, thermal fatigue, E1765 alloy thermal fatigue, E1607 alloy thermal fatigue, E1787L alloy thermal fatigue, E1827 alloy thermal fatigue, nickel base alloy, gas turbine solid blade, gas turbine hollow blade, gas turbine, turbine solid blade, turbine hollow blade, E1765 alloy, E1607 alloy, E1787L alloy, E1827 alloy, hollow blade, solid blade

ABSTRACT: The purpose of this study was to test the thermal fatigue of hollow turbine blades made of materials most typical for such use under conditions approaching actual operation, and to analyze possible irreversible changes of interest in relation to the current status of this problem in the literature. The tests involved actual solid first-stage turbine blades of one design but 3 different materials (alloys E1765, E1607A, E1827), and somewhat larger hollow blades from the second stage of a turbine (see Fig. 1 in the Enclosure), made of alloy E1787L. The test was based on 1000 cycles, with temperatures increasing to 800-

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ACCESSION NR: AT4002338

1000C in 90 seconds; temperature changes were recorded by means of a model N-700 oscillograph, and the number of fissures and changes in dimensions produced were determined. The formation of fissures is shown in Fig. 2 of the Enclosure. The changes in dimensions of the specimen during the test are presented in an extensive table. Changes in the microstructure of the material are shown in Fig. 3 of the Enclosure. Orig. art. has: 2 tables, 3 graphs, 4 illustrations.

ASSOCIATION: IMSS AN USSR

SUBMITTED: 00	DATE ACQ: 03Dec63	ENCL: 03
SUB CODE: AP, MA	NO REF SOV: 009	OTHER: 002

Card 2/5

TRET'YACHENKO, G.N.
~~ISAKHANOV~~, G.V.

5

PHASE I BOOK EXPLOITATION SOV/6342

Pisarenko, Georgiy Stepanovich, Valeriy Trofimovich Troshchenko, Vsevolod Georgiyevich Timoshenko, Vasiliy Aleksandrovich Kuz'menko, Georgiy Vakhtangovich Isakhanov, Georgiy Nikolayevich Tret'yachenko, Boris Alekseyevich Gryaznov, Nikolay Vasil'yevich Novikov, Vasiliy Nikitich Rudenko, and Rufina Gerasimovna Shumilova

Prochnost' metallokeramicheskikh materialov i splavov pri normal'nykh i vysokikh temperaturakh (Strength of Sintered Materials and Alloys at Room and High Temperatures) Kiyev, Izd-vo Akademii nauk UkrSSR, 1962. 274 p. Errata slip inserted. 2400 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Resp. Ed.: G. S. Pisarenko, Corresponding Member, Academy of Sciences USSR; Ed.: I. V. Lebedev; Tech. Ed.: Yu. B. Dakhno.

Card ~~1/9~~ 1/2

Strength of Sintered Materials (Cont.) SOV/6342

PURPOSE: The book is intended for engineers, scientific research workers, aspirants, and students concerned with problems of the strength of sintered materials and structural parts.

COVERAGE: The book reviews the results of studying the strength, ductility, and elasticity of materials and structural parts produced by powder-metallurgy methods and presents brief information on these methods. Particular attention is given to methods of experimental investigation of physical and mechanical characteristics of heat-resistant sintered materials with specific properties, and to the description of a number of testing units developed for these investigations. Some problems of the theory of the strength of brittle sintered materials and high-porosity ductile materials are discussed. Laws governing changes in characteristics of strength and elasticity under the effect of various factors are outlined. The appendix includes reference tables with data on the basic mechanical characteristics of a number of sintered materials. The assistance of members of the Powder Metallurgy Institute V. I. Kovpak, Yu. A. Kashtalyan, L. V. Kravchuk, A. P. Yakovlev, V. K. Kharchenko, V. K. Kuz'menko, and V. A. Chebotarev is acknowledged. There are 141 references, mostly Soviet.

Card 2/9 2

TRET'YACHENKO, G. N.; KRAVCHUK, L. V.

Methods for determining the thermophysical characteristics of materials at high temperatures. Teplo- i massoper. 1: 70-76 '62. (MIRA 16:1)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.

(Materials—Thermal properties)
(Materials—Testing)

S/226/63/000/001/009/016
E039/E435

AUTHOR: Tret'yachenko, G.N.

TITLE: Factors of thermal fracture resistance of metal powder materials

PERIODICAL: Poroshkovaya metallurgiya, no.1, 1963, 60-68

TEXT: The factors related to the thermal fracture resistivity of brittle materials are considered. Two main criteria are derived: one for the case of transient heating D and the other for steady heating D'. These are given by equations

$$D = RQ \qquad (31)$$

where R is a criterion of the properties of the material given by

$$R = \frac{\sigma_T(1-\mu)}{E\alpha} \qquad (30)$$

where E is the elastic modulus, α - the coefficient of linear expansion, σ_T - the tangential stress and μ - the Poisson coefficient.

Card 1/2

$$D' = \frac{\sigma_T (1-\mu)}{E\alpha} \cdot \frac{1+\left(\frac{1}{Bi_1}+\frac{1}{Bi_2}\right)S'}{\frac{r_0^2}{R_0^2-r_0^2}-\frac{1}{2\ln\frac{R_0}{r_0}}}. \quad (47)$$

where

$$S' = \frac{1}{\ln\frac{R_0}{r_0}}. \quad (41)$$

r_0 and R_0 are the internal and external radii of a tube. The mode of heating, geometrical form and dimensions and also the thermal constants of the material are taken into account in the factor Q. The derivation of these factors is given in detail. There are 2 figures.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: April 10, 1962

Card 2/2

PHASE I BOOK EXPLOITATION SOV/6067

Pisarenko, Georgiy Stepanovich, Igor' Andreyevich Kozlov, Georgiy Nikolayevich Tret'yachenko, Leonid Vasil'yevich Kravchuk, and Igor' Vladimirovich Lebedev

Nekotoryye voprosy prochnosti lopatok i diskov gazovykh turbin; stoykost' lopatok protiv teplosmen i predel'naya nesushchaya sposobnost' diskov (Some Problems of the Strength of Gas-Turbine Blades and Disk; Thermal Shock Resistance of Blades and Ultimate Load-Carrying Capacity of Disk). Kiyev, Izd-vo AN UkrSSR, 1962. 74 p. 1660 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Resp. Ed.: G. S. Pisarenko; Ed. of Publishing House: B. A. Gryaznov; Tech. Ed.: T. R. Liberman.

PURPOSE: This booklet is intended for engineers and scientific research workers concerned with problems of the strength of turbine parts.

Card 1/2

Some Problems of (Cont.) SOV/6067

COVERAGE: The booklet reviews problems connected with the determination of the strength of the most loaded and important gas-turbine parts -- disk and blades. Methods of measuring temperatures and stresses are discussed and experimental units described. Particular attention is given to the investigation of disk beyond the yield point and blades under nonstationary condition. No personalities are mentioned. There are 101 references, mostly Soviet.

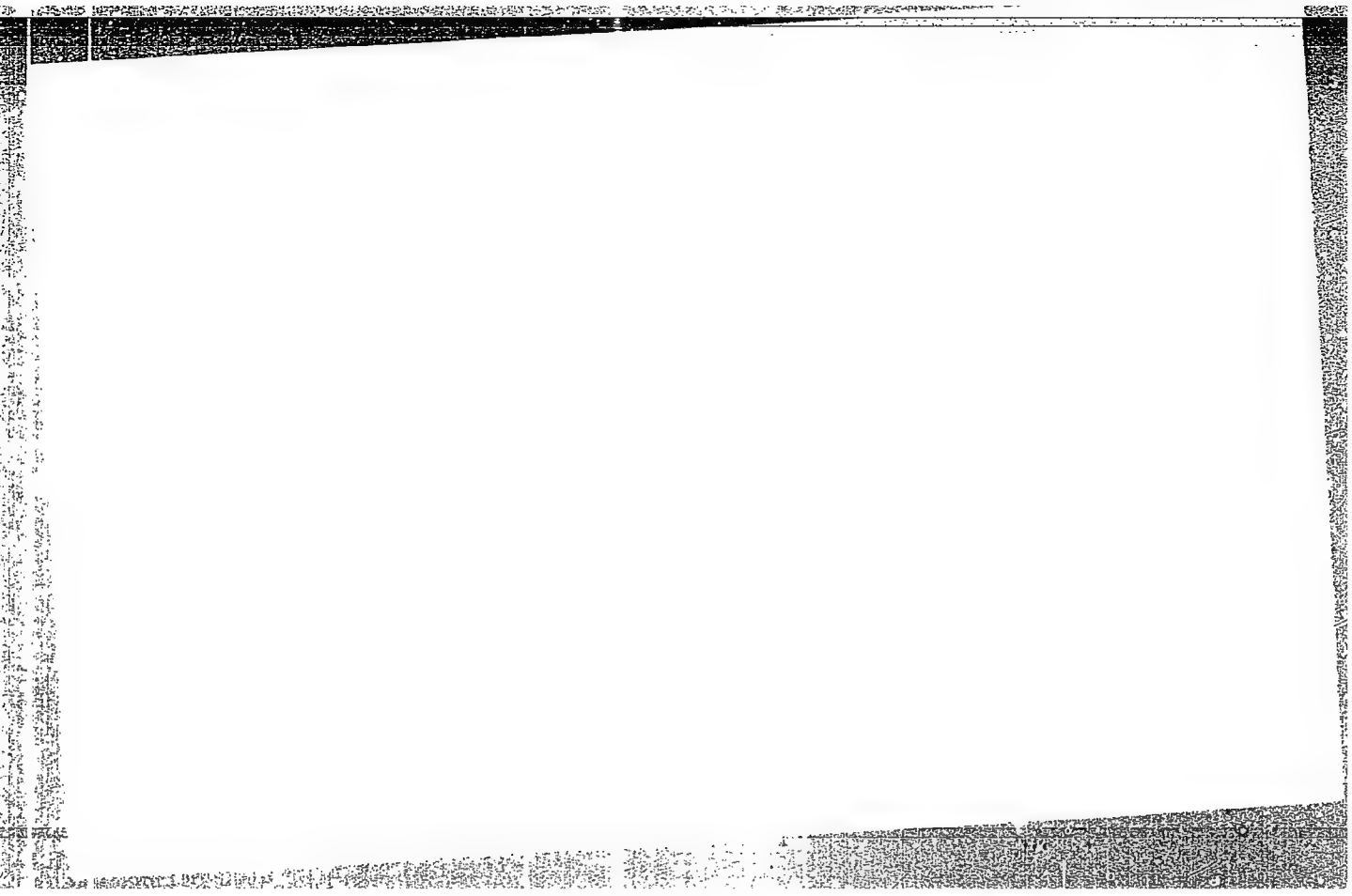
TABLE OF CONTENTS:

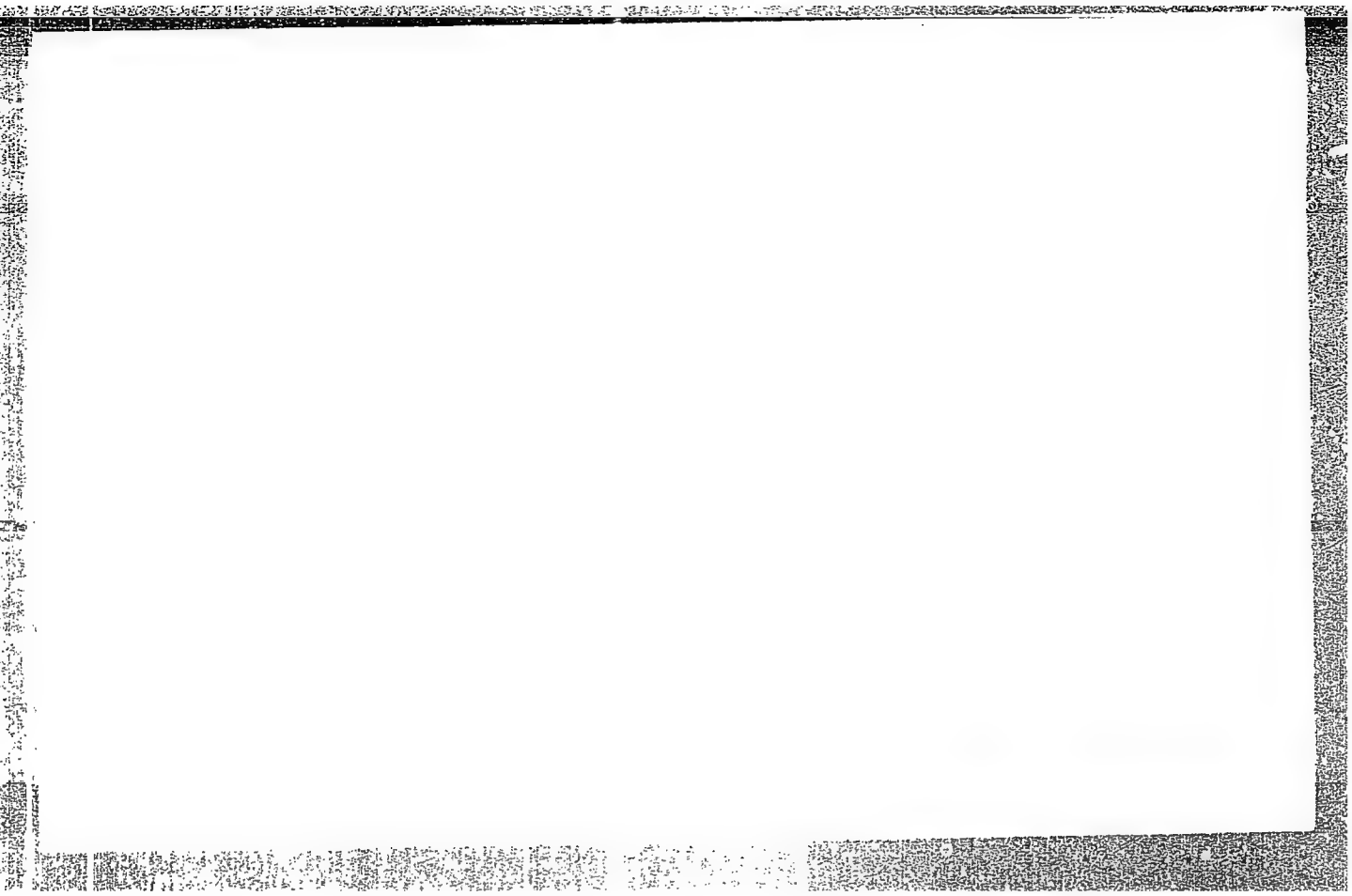
Card 2/4

2

TRET'YACHENKO, I.K., inzh.

Calculating the edge length of the upper drum of dredges. Mech. transp. 18 no.6:41-42 Je '59. (MIRA 12:9)
(Dredges)





L 10345-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6031593 (A) SOURCE CODE: UR/0226/66/000/008/0033/0037

AUTHOR: Tret'yachenko, L. A.; Yeremenko, V. N.

ORG: Institute of Problems in Material Science, Academy of Sciences, UkrSSR (Institut problem materialovedeniya, AN UkrSSR)

TITLE: Structure of some alloys of the titanium-vanadium-carbon system

SOURCE: Poroshkovaya metallurgiya, no. 8, 1966, 33-38

TOPIC TAGS: titanium base alloy, vanadium containing alloy, system polythermal section, alloy phase diagram, carbon containing alloy, titanium vanadium carbon system

ABSTRACT: A series of titanium-vanadium-carbon alloys with a constant vanadium content of 66.7 or 84 at% and alloys with a composition located along the Ti-VC and Ti-V_2C sections of the composition triangle have been investigated and the respective polythermal sections of the ternary diagram have been plotted on the basis of data obtained by physicochemical analysis. It was found that for Ti-VC, the solubility of vanadium carbide in β-titanium was less than 1 mol% at temperatures up to 1500C and about 4 mol% at 1600C. The maximum microhardness of the metallic phase was at about 25% mol%VC. For Ti-V_2C, the limit of solubility of V_2C in β-titanium was about 3 mol% at 1600C; the limit of solubility of titanium in V_2C reached about 13 mol%. The microhardness of the V_2C-base phase decreases from

Card 1/2

L 10345-67

ACC NR: AP6031593

2050 dan/mm^2 for pure V_2C to 1250 dan/mm^2 at 13% titanium. Orig. art. has: 7 figures and 1 table. [TD]

SUB CODE: 11/ SUBM DATE: 15Apr66/ ORIG REF: 003/

Card 2/2 Mle

84216
S/078/60/005/010/011/021
B004/B067

18.1153 only 2308

AUTHORS: Yeremenko, V. N., Tret'yachenko, L. A., Yakhimovich, R. I.

TITLE: Melting-point Diagram of the System Tantalum - Vanadium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 10, pp. 2290-2293

TEXT: The authors studied the structure and properties of tantalum - vanadium alloys to determine the phase diagram of this system. The two components were fused in an arc furnace in argon atmosphere at 300 - 400 torr. The alloys were homogenized by remelting them 6 to 7 times, viz., alloys of up to 50 atom% Ta at 1600°C, and of more than 50 atom% Ta at 1800°C. They were homogenized in vacuum of at least 1.10^{-4} torr in an МВП - 3М (MVP-ZM) high-frequency furnace. The microstructure of the alloys (Fig. 1) showed that in the system Ta - V a continuous series of solid solutions is formed, which was confirmed by X-ray examinations. All alloys had a body-centered lattice whose parameter steadily increased from 3.02 kX (pure vanadium) to 3.29 kX (pure tantalum) (Fig. 2). Microhardness

Card 1/2

84216
S/078/60/005/010/011/021
B004/B067

Melting-point Diagram of the System Tantalum - Vanadium

was determined by means of a ПМТ-3 (PMT-3) apparatus (Fig. 3). It varied according to the rule formulated by Kurnakov-Zhemchuzhnyy for continuous series of solid metal solutions. The solidus line (Fig. 4) was determined by heating the samples fastened between electrodes with a current passing through them. In the circuit, an ОСУ-20 (OSU-20) transformer and a ТНН-130 (TNN-130) buncher were used. The temperature was measured with an ОП-48 (OP-48) pyrometer. As is shown by Fig. 4, the temperature at the beginning of the melting process rises steadily from 1800°C (pure vanadium) to 2950°C (pure tantalum). At lower temperatures (1000 - 1400°C), the formation of a small amount of a new phase was observed, which is further investigated. There are 4 figures and 3 references: 2 Soviet and 1 US.

SUBMITTED: July 27, 1959

Card 2/2

YEREMENKO, V.N. [IEremenko, V.N.]; TRET'YACHENKO, L.A. [Tret'iachenko, L.O.]; GOLUBENKO, Z.P. [Holubenko, Z.P.]

Limits of the existence of the σ-phase in the tantalum-vanadium system. Dop. AN URSR no.2:192-195 '62. (MIRA 15:2)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR. Predstavleno akademikom AN USSR I.M.Fedorchenko.
(Tantalum—Vanadium alloys)

L 43737-66 EWT(m)/T/EWP(t)/ETI IJP(c) JG/JD

ACC NR: AP6030766 (N) SOURCE CODE: UR/0363/66/002/009/1568/1573

AUTHOR: Tret'yachenko, L. A.; Yeremenko, V. N.

ORG: Institute of Problems of Material Science, Academy of Sciences, UkrSSR (Institut problem materialovedeniya Akademii nauk UkrSSR)

TITLE: Vanadium-carbon system

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 9, 1966, 1568-1573

TOPIC TAGS: vanadium carbon system, vanadium carbon alloy, vanadium monocarbide, vanadium subcarbide, ALLOY SYSTEM, VANADIUM ALLOY, CARBON ALLOY, ALLOY PHASE DIAGRAM

ABSTRACT: A series of vanadium-carbon alloys containing up to 58 at% of carbon has been investigated. On the basis of obtained results a phase diagram of the vanadium carbon system was plotted (see Fig. 1). The solubility of carbon in vanadium is about 4 at% at 1650 and drops rapidly with decreasing temperature. The homogeneity region of V_2C carbide extends from 30 to 33.3 at%C at 1650C and from 31.5 to 33.3 at%C at 1450C. The homogeneity region of VC carbide extends from 39 to 47.5 at%C at 2100C and from 42.5 to 47.5 at%C at 1450C. In alloys with 37—41 at%C, a ξ-phase was observed, the nature and structure of which was not determined. In the x-ray diffraction pat-

Card 1/2 UDC: 546.881+546.26

L 43737-66

ACC NR: AP6030766

0

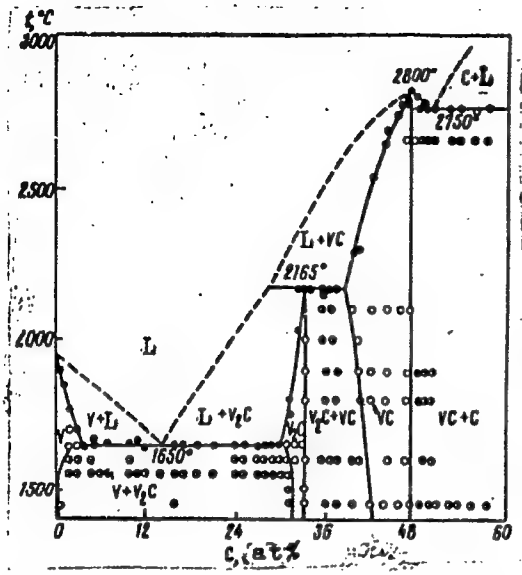


Fig. 1. Phase diagram of the vanadium-carbon system. (L - designates liquid).

terns of alloys containing more carbon than $VC_{0.90}$, some additional lines were found, the nature of which also was not determined. Orig. art. has: 4 figures. [TD]

SUB CODE: 07, 11, 20/ SUBM DATE: 23Nov65/ ORIG REF: 012/ OTH REF: 015/ ATD PRESS: 5076

Card 2/2 hs

L 27512-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG/GS

ACC NR: AT6012372 SOURCE CODE: UR/0000/65/000/000/0075/0081

AUTHORS: Tret'yachenko, L. A.; Yermenko, V. N.

ORG: none

TITLE: Phase equilibria in the system Ti--V--C at 1450, 1600, and 1800C

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th. Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 75-81

TOPIC TAGS: titanium, vanadium, carbon, alloy phase diagram, phase composition

ABSTRACT: Phase diagrams for the system Ti--V--C at 1450, 1600, and 1800C were derived (see Fig. 1). The investigation supplements the results of V. N. Yeremenko (Titan i yego splavy. Kiyev, Izd-vo AN UkrSSR, 1961). Microstructure photographs of the specimens are presented. The phase composition was determined by x-ray spectroscopy. The results of x-ray analysis, microhardness, and change in the lattice parameters are in good agreement with the phase boundaries of the phase diagrams.

Card 1/3

L 27512-66
ACC NR: AT6012372

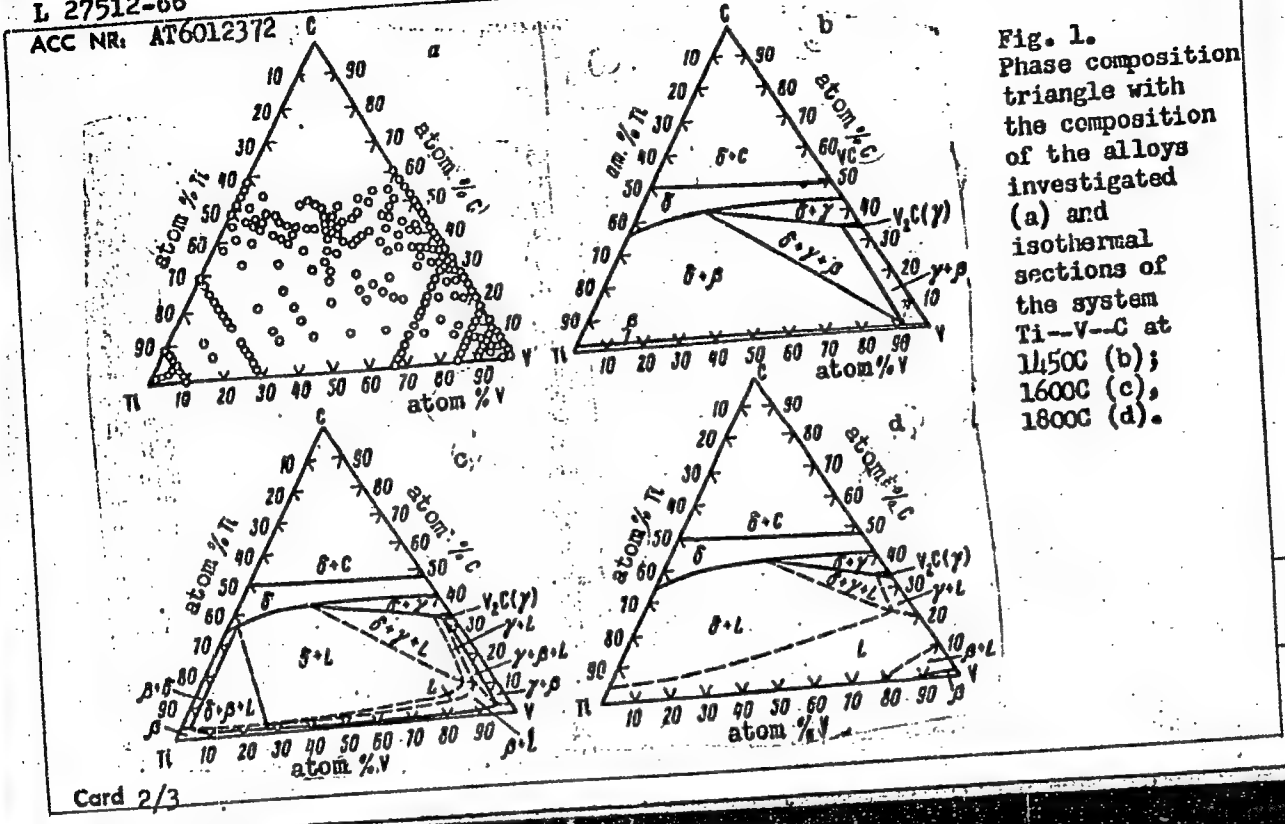


Fig. 1. Phase composition triangle with the composition of the alloys investigated (a) and isothermal sections of the system Ti--V--C at 1450C (b); 1600C (c), 1800C (d).

Card 2/3

L 27512-66

ACC NR: AT6012372

0

Orig. art. has: 1 table and 5 figures.

SUB CODE: 11/ SUBM DATE: 02Dec65/ ORIG REF: 009/ OTH REF: 014

Card 3/3 BLG

L 46004-66 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/JG/JT

ACC NR: AP6025943 SOURCE CODE: UR/0226/66/000/007/0084/0088

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TITLE: Structure and properties of alloys with respect to the TiC-$VC_{0.90}$, TiC-V_2C and TiC-V sections and in the TiC-$VC_{0.90}$ region of the Ti-V-C ternary system

SOURCE: Poroshkovaya metallurgiya, no. 7, 1966, 84-88

TOPIC TAGS: vanadium containing alloy, titanium containing alloy, carbide, arc furnace, stoichiometric mixture, microhardening, metallographic examination, x ray diffraction analysis, TERNARY ALLOY

ABSTRACT: The alloys for the study were melted in an arc furnace, with a tungsten electrode and a water-cooled cooper hearth, in a 400-500 mm Hg argon atmosphere. The argon was purified by melting a titanium getter. Carbothermic vanadium (99.7% V, 0.23% C), titanium iodide and spectrally pure graphite were used as starting materials. Titanium carbide with a stoichiometric composition and vanadium carbide containing approximately 40 at.% C were premelted and used for preparing the charge. The alloy ingots produced in the arc furnace were cut on an electroerosion machine tool. These were annealed at various temperatures to a uniform composition

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in vacuum or in an inert atmosphere at low temperatures in TGV-1 or MVP-3 M type ovens in molybdenum heater containers and quickly cooled. The alloys were studied by metallographic and x-ray diffraction analysis using the powder method on the URS-70 unit in the RKD camera with copper K_α-radiation. The Pirani-Altertum method was used for measuring microhardness and determining the initial melting point. All alloys which contained more than 30 at.% C were chemically analyzed. The melting point and microhardness of titanium carbide solid solutions and carbon-saturated vanadium monocarbide were determined. The composition of these corresponds to the TiC-$VC_{0.90}$ section. It is found that the temperature of the eutectic formed by TiC-$VC_{0.90}$ solid solutions with graphite decreases from 2950 to 2750°C with an increase in $VC_{0.90}$ from zero to 100 mol.%. The TiC-V_2C and TiC-V polythermic sections of the Ti-V-C system are plotted and the lattice constants and phase microhardness are determined for these alloys with respect to these sections. Neither of these sections is quasibinary. Orig. art. has: 5 figures, 3 tables.

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On the boundary of ...

same alloy after low-temperature annealing; thereby small σ-phase formations are noted. Further, an alloy with a considerable amount of σ-phase is shown, and (lastly) the microstructure in the region of homogeneous σ-phase. The σ-phase has very great hardness. The microhardness, determined by means of the device ПМТ-3 (PMT-3), of the σ-phase in alloys containing 32.0 and 41.5 atom% Ta, ranged between 1070 - 1260 kg/mm^2. The line digrams (of an X-ray picture) of a specimen containing 32.0 atom% Ta is shown. Nearly all the lines of the σ-phase were identified by the tetragonal lattice. Calculation of lattice parameters showed that the σ-phase in alloys containing 32.0 atm% Ta has parameters a = 6.15 kX and c = 8.85 kX. According to the data of W. Rostoker and A. Yamamoto ((Ref. 1: Trans. Amer. Soc. Metals, 46, 1136, 1954), these parameters are a = 6.104 kX and c = 8.833 kX. A state diagram of the Ta-V system is shown, using data of Ref. 1 (Op.cit.) and the solidus-temperatures found in Ref. 2 (Op.cit.). There are 3 figures, 1 table and 3 refer nces: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: W. Rostoker, A.

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Yamamoto, Trans. Amer. Soc. Metals, 46, 1136, 1954.

ASSOCIATION: Instytut metalokeramiky i spetssplaviv AN UkrRSR (Institute of Powder Metals and Special Alloys of the AS UkrRSR)

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